18. City of Surprise

The City of Surprise is located in the fast-growing part of the Valley of the Sun, and to the northwest of Phoenix, in Maricopa County. The City of Surprise was originally founded to provide home sites for agricultural workers in the West Valley. The city is experiencing explosive growth in its residential, commercial and industrial sectors. The city also offers business and industry opportunities for growth and profit. The MPA is located north of Bell Road, west Dysart Road, Bullard Avenue, and 163rd Avenue, east of R4W, and south of the Maricopa County line.

According to the ADWR Annual Water Withdrawal and Use Report, in the City of Surprise in 1998, 89 af of groundwater were pumped and delivered, and 121 af of groundwater was also received from other IDs. Of the total 210 af of water, 54 af were delivered to other users leaving 156 af to be used in the City of Surprise.

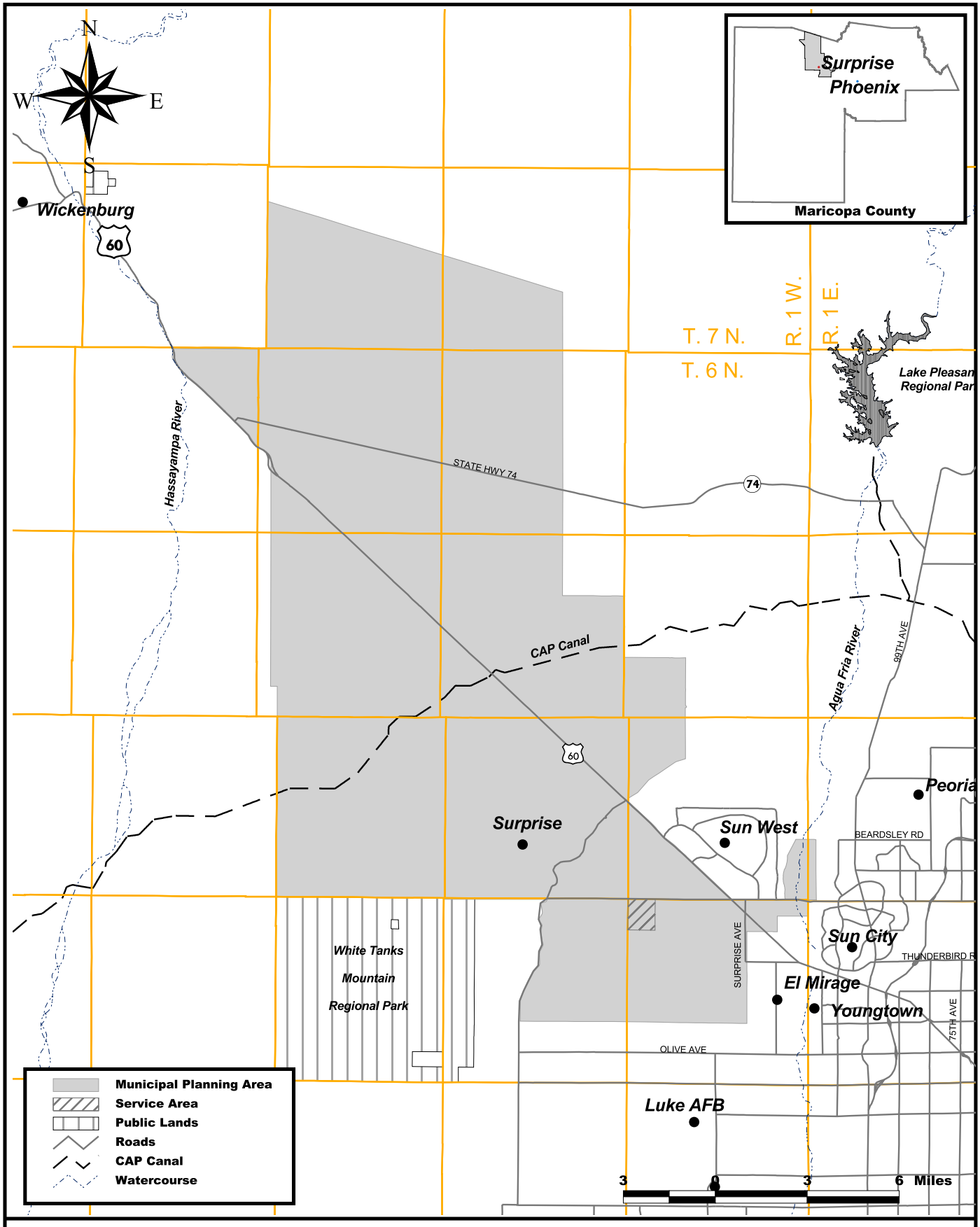
A. Plans to Take and Use CAP Water

The City of Surprise currently has a subcontract for 7,373 af of CAP water. Under the Settlement Alternative, the city would receive an additional 2,876 af of CAP water. That CAP water would be delivered for a 50-year contract period (i.e., from 2001-2051). The CAP water would be used to supplement both current and projected water supply demands over the next 50 years and would help reduce the continuing dependence on pumping groundwater from an overdrafted groundwater system. Table L-M&I-105 outlines the proposed CAP allocation by alternative.

Table L-M&I-105
CAP Allocation Draft EIS
City of Surprise - Proposed CAP Allocation

Alternative	Allocation (in afa)	Priority
Settlement Alternative	2,876	M&I
No Action	0	-
Non-Settlement Alternative 1	2,876	M&I
Non-Settlement Alternative 2	0	-
Non-Settlement Alternative 3A	0	-
Non-Settlement Alternative 3B	3,146	NIA
Existing CAP Allocation	7,373	-

Figure L-M&I-53 shows the service area and MPA for the City of Surprise. The service area covers approximately 573 acres and the MPA covers approximately 174,396 acres. The City of Surprise's short-term plans to take and use their CAP water involve two planned recharge and recovery facilities: McMicken Dam and Surprise Park. The McMicken Dam Recharge Facility is proposed to be located west of McMicken Dam, between Grand Avenue and Bell Road. CAP water could either be wheeled through the Beardsley Canal or conveyed through a pipeline with an alignment along Grand Avenue to the recharge



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CAP Allocation Draft EIS
General Location Map
City of Surprise

Figure #L-M&I-53

facility. The first phase of this project has a capacity of 10,000 afa and is scheduled for completion in 2000, with an ultimate capacity of 100,000 afa. If constructed, the pipeline from the CAP system to the McMicken Dam recharge facility would extend approximately six miles along the Grand Avenue alignment and would disturb approximately 75 acres, assuming a 100-foot wide construction easement.

The Surprise Park Recharge Facility is located near the Luke Auxiliary Airfield, west of Litchfield Road and south of Bell Road. It is planned to be operational within 2 years for effluent recharge and five years for CAP water recharge. Recovery from either facility would be through existing City of Surprise wells. CAP water could be supplied to this facility via an extension of the aforementioned potential pipeline along Grand Avenue. If constructed, this reach of the pipeline would also be approximately 6 miles long and would disturb another approximately 75 acres.

The City of Surprise is participating in the West Salt River Valley CAP Subcontractors (WESTCAPS) planning process for a regional long-term solution for taking and using CAP water. One option that is being considered by the WESTCAPS group is a regional water treatment plant sited on the Beardsley Canal at Bell Road or Grand Avenue (Swanson 2000).

B. Population Projection

The estimated 2001 population for the City of Surprise is 26,506 and, the estimated 2051 population is 235,977.

C. Water Demand and Supply Quantities

As previously shown in Appendix C–M&I Sector Water Uses, it is estimated that water demand in the City of Surprise would increase from 6,354 af in year 2001 to 56,566 af in year 2051. The projected water uses both by water source and alternatives are provided below in Table L-M&I-106. Based on anticipated water demands, which are provided above, CAP water which would be allocated under the Settlement Alternative would provide 52 percent and six percent of the current estimated water supply required for the City of Surprise for the years 2001 and 2051, respectively.

Table L–M&I-106
CAP Allocation Draft EIS
City of Surprise – Projected Water Use

Alternative	Annual CAP		Groundwater		Effluent		CAGRD Ground Water		Other Surface Water*		Total Demand	
	2001	2051	2001	2051	2001	2051	2001	2051	2001	2051	2001	2051
Settlement Alternative	2,812	10,987	791	791	0	3,584	0	21,381	2,751	19,823	6,354	56,566
No Action	2,812	7,373	791	791	0	3,584	0	24,257	2,751	19,823	6,354	56,566
Non-Settlement Alternative 1	2,812	10,249	791	791	0	3,584	0	21,381	2,751	19,823	6,354	56,566
Non-Settlement Alternative 2	2,812	7,373	791	791	0	3,584	0	24,257	2,751	19,823	6,354	56,566
Non-Settlement Alternative 3A	2,812	7,373	791	791	0	3,584	0	24,257	2,751	19,823	6,354	56,566
Non-Settlement Alternative 3B	2,812	10,249	791	791	0	3,584	0	21,381	2,751	19,823	6,354	56,566

*SRP and other districts.
Note: A more detailed breakdown of supplies may be found in Appendix C.

It is estimated that the demand for water at the end of the CAP contract period would be approximately 56,566 af. For all alternatives, there is estimated to be no unmet demand. In the Settlement Alternative, Non-Settlement Alternative 1 and 3B, 2,876 afa of are met by the additional CAP allocation. Alternatively, this 2,876 afa of demand are met by CAGRD membership under the No Action Alternative and Non-Settlement Alternative 2 and 3A.

D. Environmental Effects

The following sections include a general description of existing conditions relating to land use, water resources and socioeconomics for each entity. The following summaries also include a description of the existing conditions and brief description of the impacts to biological and cultural resources that would result from construction of CAP delivery facilities and conversion of desert and agricultural lands to urban uses.

1. Land Use

According to data from MAG, the land use designations in the City of Surprise MPA in 1995 consisted of approximately 18,181 acres of agriculture, 11,166 acres of developed land, 707 acres of rural land, 143,343 acres of vacant land, and 999 acres of water, including lakes, rivers and canals. As described in the introduction to this appendix, the 1995 MAG categories were redefined into three new categories (i.e., agriculture, desert and urban). These 1995 data were also updated and adjusted based on reviews of the 1998 aerial photography and the field surveys that were completed to assess biological resources for

this EIS. Table L-M&I-107 provides the projected acres of land within the City of Surprise MPA that are agriculture, desert or urban and the number of acres expected to change from the existing category for the years 2001 and 2051.

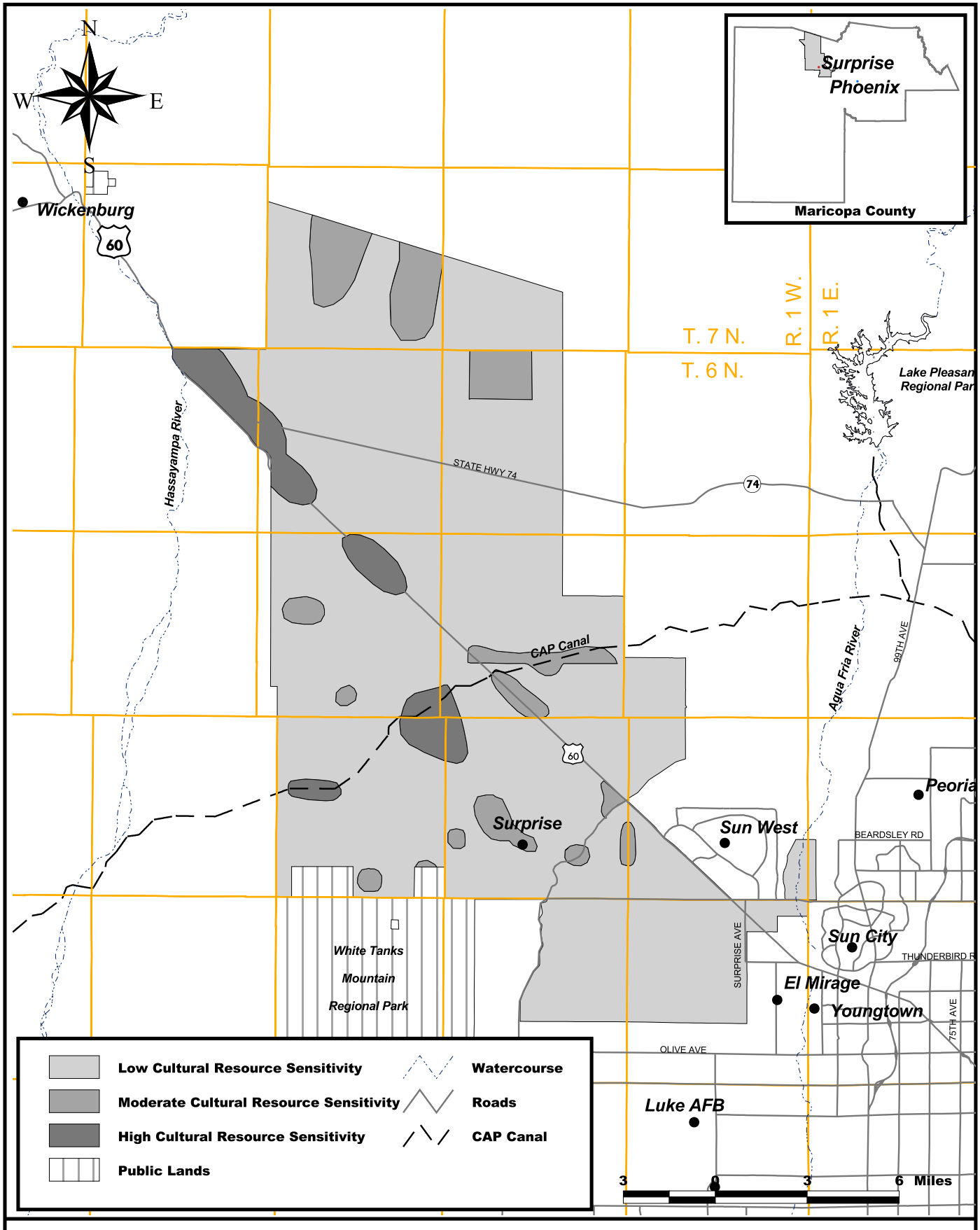
TableL-M&I-107
CAP Allocation Draft EIS
City of Surprise – Projected Land Use Changes Within the MPA (in acres)

Alternative	Year	Agriculture	Agriculture Urbanized	Desert	Desert Urbanized	Urban	Changes in Urban Acreage
Settlement Alternative	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783
No Action	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783
Non-Settlement Alternative 1	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783
Non-Settlement Alternative 2	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783
Non-Settlement Alternative 3A	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783
Non-Settlement Alternative 3B	2001	12,160	--	141,190	--	21,046	--
	2051	0	12,160	118,567	22,623	55,829	34,783

2. Archaeological Resources

A few linear (e.g., Hathaway 1991; Jensen 1994; Kwiatkowski 1993) and block (e.g., Dosh 1988; Neily 1992b) surveys have taken place within the City of Surprise MPA; however, the majority of the MPA has not been examined. The vicinity of Morristown, in the northwest portion of the entity, is classified as an area of high cultural resource sensitivity. Numerous historic properties representing most identified historic contexts have been documented therein, including sites associated with homesteading, transportation, mining, ranching, and agriculture. Although the majority of the surface remains identified to date in this area have been historic, prehistoric and protohistoric resources also are known, including Archaic and Ceramic period artifact concentrations, agricultural features (e.g., AZ T:2:50(ASM)), roasting pits, cleared circles, and rock rings. Elsewhere within the entity, other small areas of high and moderate cultural resource sensitivity reflect the noncontiguous nature of the MPA's survey coverage. It should be noted that the surveyed areas have tended to yield cultural resources, therefore, the potential for additional resources in unexamined areas is high.

Cultural resource sensitivity areas in the City of Surprise MPA are shown on Figure L-M&I-54. Based on the limited data used to generate the cultural sensitivity designations, the potential for cultural resource impacts in this entity is moderate. Mitigation of cultural resource impacts due to urban expansion would be determined by local jurisdictions and development of applicable permit requirements (such as the CWA Section 404 permit).



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CAP Allocation Draft EIS
Cultural Resources
City of Surprise

Figure #L-M&I-54

Impacts on cultural resources due to future land use changes would be identical for each of the five alternatives. Mitigation for such impacts would be dependent on the requirements of the local jurisdiction. With regard to new facilities taking and treating the additional CAP allocation, Reclamation would carry out additional cultural resource compliance as appropriate, based on final plans provided by Surprise. The McMicken Dam Recharge Facility was already subject of an Environmental Assessment (EA) and a Finding of No Significant Impact (FONSI) prepared by Reclamation in 1996.

3. Biological Resources

Existing Habitats

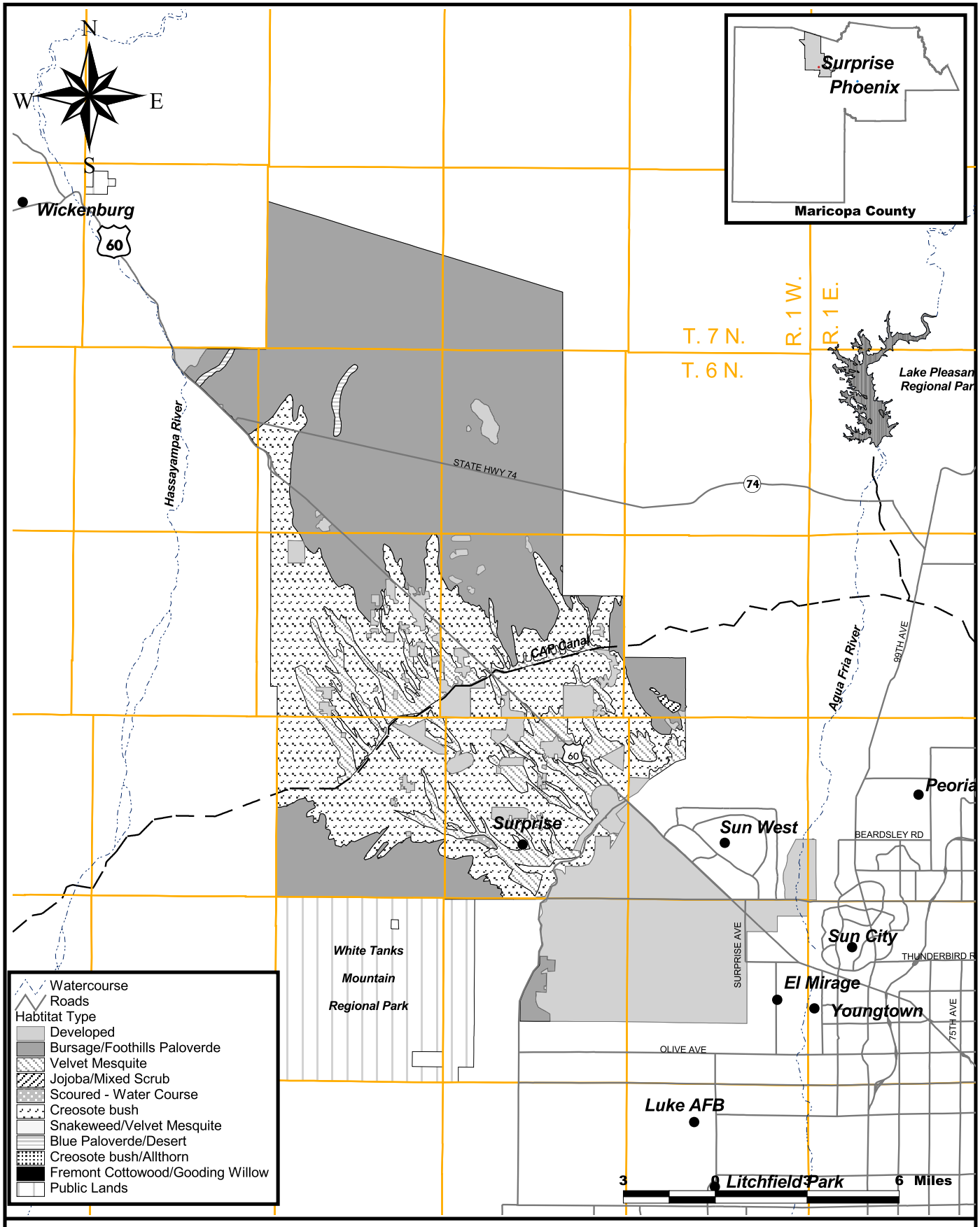
The northern portion of the City of Surprise MPA is composed of rocky hills and ridges below 3,500 feet in elevation within the Wickenburg Mountains. Jojoba/Mixed Scrub Association occurs mainly on the steeper, north-facing slopes. Co-dominants include *Parish viguiera,* white-thorn acacia, wild-buckwheat, and turpentine-bush. Bursage/Foothill Paloverde Association occurs on the remaining slopes, alluvial fans and bajadas. Co-dominants include creosote-bush and staghorn cholla. Other common trees include velvet mesquite, desert ironwood, blue-paloverde, allthorn, and saguaro. Saguaro density is generally moderate. The Creosote-Bush Association occurs in the southern portion of the water district on silty plains, often forming a mosaic with Velvet Mesquite Association. Blue-Paloverde/Desert Ironwood Association habitat occurs along major ephemeral washes. The habitat zones are shown on Figure L-M&I-55. Table L-M&I-108 provides the habitat acreages for the habitat zones described above.

TableL-M&I-108
CAP Allocation Draft EIS
City of Surprise MPA – Habitat Acreages

Vegetation Name	Acres
Developed	33,206
Bursage/Foothills Paloverde	79,493
Velvet Mesquite	12,175
Jojoba/Mixed Scrub	145
Scoured, Washes and Creekbeds	130
Creosote Bush	48,680
Blue Paloverde/Desert	567
Total	**174,396**

Impacts to Biological Resources

Under the No Action Alternative, urban growth within the City of Surprise MPA over the 50-year study period would result in the loss of an estimated 22,623 acres of Sonoran desertscrub and associated wildlife resources. There may be indirect impacts on wildlife occurring in the adjacent undeveloped habitat.



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CAP Allocation Draft EIS
Habitat Zones
City of Surprise

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Figure No. L-M&I-55

An estimated 12,160 acres of farmland would be urbanized. This urbanization of the farmland would result in the creation of fallow fields for some undetermined length of time. Fallow agricultural fields in the area may be used by burrowing owls, a species protected under the MBTA. Individual developers who convert fallow lands for urban uses would be responsible for ensuring burrowing owls are removed prior to development. Failure to do so would be considered a violation of the MBTA. Under the action alternatives, there is no difference in impacts from the No Action baseline.

Potential T&E Species and Acres of Potential T&E Species Habitat

Because the allocation of CAP water has no effect on urban growth, there would be no effect on T&E species from the CAP allocation. The City of Surprise would be responsible for complying with the relevant provisions of the ESA as it permits and approves future urban growth.

The City of Surprise MPA is located within Maricopa County; there are 14 T&E species listed by the USFWS. Potentially suitable habitat only exists for cactus ferruginous pygmy owl, and Arizona agave. Approximately 92,235 acres of potentially suitable habitat for the cactus ferruginous pygmy owl were identified within the City of Surprise MPA. Also, approximately 155 acres above 3,000 feet of potentially suitable habitat for Arizona agave were identified.

4. Water Resources

Demands in the City of Suprise have historically been met by pumping groundwater from the basin fill. The City of Surprise covers an extensive geographic area. Much of the present development is in the southeastern part of the city, which is within the area analyzed. In the future, development may occur northwesterly, out of the West SRV and into the Hassayampa sub-basin. The analysis performed placed the demands for this population within the West SRV area.

Estimated groundwater level impacts are summarized in Table L-M&I-109, which shows the estimated groundwater level change for the period from 2001-2051 as well as the groundwater level impacts or the difference between the change in groundwater levels for each alternative relative to the change for the No Action Alternative. The City of Surprise falls within three groundwater sub-areas used for the analysis. Table L-M&I-109 shows estimated groundwater conditions (in order of presentation in the table) in the vicinity of Sun City West, in the vicinity of the City of El Mirage, and north of the western part of the City of Glendale.

Under the No Action Alternative, groundwater levels would decline by about 136 to 150 feet during the 2001 to 2051 period east of the City of El Mirage and north of the City of Glendale. In the vicinity of Sun City West, groundwater levels would be essentially unchanged from the present levels. The declines reflect the continued reliance on groundwater to meet demands, both in the City of Surprise and in adjacent areas. The declines have been moderated by the impact of direct recharge of CAP water in the Agua Fria recharge facilities and in future west-side recharge facilities located south of the city. Substantial changes in TDS concentrations would not be anticipated under the No Action Alternative. The lower groundwater levels in the most southerly areas considered could result in subsidence.

Groundwater levels near the Cities of El Mirage and Glendale would also decline under the Settlement and all Non-Settlement Alternatives. The greatest declines occur under the Settlement Alternative and Non-Settlement Alternatives 3A and 3B, which have the smallest amount of direct recharge. There would be potential subsidence in this area under all alternatives.

Groundwater levels near Sun City West under the Settlement Alternative and Non-Settlement Alternatives would be similar to the levels under the No Action Alternative (within 14 feet). These groundwater levels are influenced both by the amount of direct recharge of CAP water in adjacent areas and by changes in the amount of CAP water available to the City of Surprise and adjacent M&I entities.

The impacts in the Settlement Alternative and Non-Settlement Alternatives primarily reflect the influence of direct recharge in the MWD sub-area. The magnitude of the decline in groundwater levels from No Action Alternative groundwater levels for each alternative generally reflects the reduction in CAP water available from the Recharge Pool.

Table L-M&I-109 CAP Allocation Draft EIS City of Surprise – Groundwater Data Table		
Alternatives		
	Estimated Groundwater Level Change from 2001-2051 (in Feet)	**Groundwater Level Impact**(in Feet)**
No Action	1/-136/-150	--
Settlement Alternative	-4/-198/-231	-4/-62/-80
Non-Settlement Alternative 1	12/-147/-160	11/-11/-10
Non-Settlement Alternative 2	-5/-157/-172	-5/-21/-21
Non-Settlement Alternative 3A	-13/-185/-207	-14/-49/-57
Non-Settlement Alternative 3B	3/-172/-202	2/-36/-51

*Values correspond to the Sun City West, West-side M&I, and MWD sub-areas, respectively, as discussed in Appendix I.
** Computed by subtracting the estimated groundwater decline from 2001 to 2051 for the No Action Alternative from the estimated change in groundwater level for the same period for the alternative under consideration. The estimated impact is considered to be more accurate than the estimated decline in groundwater levels.

5. Socioeconomic

The same population growth is supported under all alternatives, including the No Action Alternative. However, the cost of providing water may vary by alternative. Costs were estimated, on a per af basis, for providing the proposed allocations and, in their absence, alternative water supplies. The alternative water supplies include joining the CAGRD and, if needed, treating and reusing effluent. The difference in cost for this small increment of the City of Surprise's total water supply is considered insignificant. It should be noted that the increment of demand met by the proposed CAP allocation is approximately 5.6 percent of the total year 2051 demand for the City of Surprise.

Table L-M&I-110
CAP Allocation Draft EIS Appendix L
City of Surprise –Cost of Potable Water for Additional Allocation Increment

Alternative	Cost of Water ($ per af)	Water Source
Settlement Alternative	154[a]	CAP Allocation
No Action	272 – 280[b]	CAGRD
Non-Settlement Alternative 1	154[a]	CAP Allocation
Non-Settlement Alternative 2	272 – 280[b]	CAGRD
Non-Settlement Alternative 3A	272 – 280[b]	CAGRD
Non-Settlement Alternative 3B	154[a]	CAP Allocation

Notes:
a. Estimated average unit cost in year 2000 dollars.
b. Estimated range of unit costs in year 2000 dollars. Range is due to estimated change in groundwater pumping lifts during study period and does not include wellhead treatment costs.